



PRESCRIPTION PATTERN OF DRUGS USED FOR ASTHMA IN TERTIARY CARE HOSPITAL

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ABSTRACT

The present study evaluated the pattern of drugs usage of asthma patients at tertiary care hospital. Predesigned Case record form was used for factoring patient's demographical profile, illness history and prescription regimen of drugs for evaluation. A total 150 prescriptions were analyzed in which Maximum prescriptions were of the age group between 20 -40 yr (44.64%). Total 359 asthma drugs were prescribed in 150 prescriptions. Average number of drugs per prescription was 2.38. Most commonly prescribed drugs were salbutamol in combination with Ipratropium bromide (31.15%) followed by Budesonide (24.51%), Theophylline (21.16%) and Montelukast (14.20%). The prescription pattern study showed high usage of Beta agonists in combination (Salbutamol+Ipratropium bromide) followed by inhaled corticosteroids. The practice of prescribing drugs with high efficacy and optimum cost needs to be followed in order to reduce medical and financial burden of the patient resulting in improvement of health.

Key Words:-Asthma, Budesonide, Case record form, Efficacy, Ipratropium bromide, Monteleukast.

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INTRODUCTION

Asthma is a chronic disease characterized by recurrent attacks of breathlessness and wheezing, which vary on severity and frequency from person to person. During an asthma attack the lining of the bronchial tube swells, causing the airways to narrow and reducing the flow of air into and out of the lungs (WHO, 2007).

The number of deaths due to asthma has declined, even in the face of an increasing prevalence of the disease (NHIS 2005); fewer patients who have asthma report limitations to activities; and an increasing proportion of

people who have asthma receive formal patient education. However, the burden of avoidable hospitalizations remains. Collectively, people who have asthma have more than 497,000 hospitalizations annually (NHIS 2005) (Expert Panel Report to Provide Clinical Guidelines for Diagnosis and Treatment of Asthma. Journal of School Health, 2007)

Asthma affected an estimate of 300 million people worldwide. The prevalence of asthma has been estimated to range 3-38% in children and 2-12% in adults, being the commonest chronic disorder among children (Cavkaytar O and Sekerel B E, 2014). A recent Indian Study on Epidemiology of Asthma, Respiratory Symptoms and Chronic Bronchitis (INSEARCH) done with 85,105 men and 84,470 women from 12 urban and 11 rural sites in India estimated the prevalence of asthma in India to be 2.05% among those aged >15 years, with an estimated national burden of 18million asthmatics (Jindal SK et al., 2012). The prevalence of asthma is increasing every year and the WHO has estimated 15 million disability adjusted life years are lost and 2, 50,000 deaths are reported worldwide. About 15 million disability adjusted life years are lost annually due to asthma, which represents 1% of the total global disease burden (Burney P et al., 2015).

Inhaled corticosteroids alone or in combination with a long-acting b-agonist (LABA) are generally more active as asthma controller therapy, 2 recent pragmatic

trials in a real world setting show that montelukast is not inferior to beclomethasone as first-line therapy or to a LABA as add-on therapy for chronic asthma in the community (Sakula A, 1985).

The objective of this cross sectional study is to analyze the drug prescription pattern used for asthmatic patients. In addition the medication use pattern, correlation between the risk factors, asthma and patient's knowledge about the drug use will also be taken in account. Drug use pattern study provides insight of safety and efficacy of the therapy used for management of the disease. This study will help in interpretation of the therapy options used in this healthcare setting (Kim H and Mazza J, 2011).

A prescription based survey is considered as a scientific method to assess and evaluate the rationality of a prescription. In this study the drug use pattern will be determined by using various evaluation parameters like prescription indicators. This study aimed to assess the prescription pattern in asthma therapy with special focus on inhaled corticosteroids and beta-agonists to generate data with respect to variability of drug use among the adult patients. Asthma's cost effectiveness is also a major consideration in the evaluation of its treatment options (Global strategy, 2006).

This study will contribute to improve the patient health care and prescribing practices of asthma as it is very common diseased condition worldwide. This study will help in interpretation of the therapy options used in this healthcare setting and providing treatment options having optimum therapy with maximum safety and efficacy. This study will also help the health care professionals to analyse the most commonly prescribed drugs and ultimately reducing burden of drugs for patients.

MATERIAL AND METHODS

We conducted a cross sectional study for a period of 6 months considering the inclusion and exclusion criteria asthma prescriptions were selected from General Medical Ward (Male and Female) and outpatient department of The Oxford Medical College, Hospital and Research Centre, Attibele, Bangalore in which a total 150 number of prescriptions were analyzed. Predesigned case record form was used for factoring patient's demographic details and prescribed drugs for their analysis. Ethical approval is obtained from the Institutional ethics committee of The Oxford Medical College, Hospital and Research Centre, Attibele, Bangalore. Prescriptions for patients with either sex, patients above 18 years of age, in patients and out patients, patients with co-morbidities, pediatrics and pregnant women were included in the study. Patients discontinuing treatment midway were excluded from the study.

The data was collected from inpatient case records and outpatient card. Analysis of medications prescribed to the asthma patients was done using prescribing indicators. Statistical Analysis was performed using Microsoft Excel

2007. The data was presented using frequencies, percentages along with appropriate graphs and charts. The quantitative variables were presented using descriptive statistics such as mean, and standard deviation. The Association between variables was tested using t-test. The level of significance was set at 0.05. All p values less than 0.05 are considered as significant.

RESULTS AND DISCUSSION

The present study was aimed to assess the prescription pattern and pharmaco-economic analysis in asthma therapy with focus on Inhalational corticosteroid and beta-2 agonist drugs to generate data with respect to the extent of variability of drug usage as well as the cost, among group of patient suffering from asthma. In our study, prescriptions of 150 patients were studied.

Age and Gender distribution

On analysis of the prescriptions, it was found that asthma was reported more in male patients (57%) than in females (43%). Majority of the prescriptions analyzed were of the age group 20- 40 years. A very less prescriptions (3.33%) were found below the age of 20 years. A study conducted by Anuj P and coworkers in eastern India in the year 2014 showed the similar frequency of asthma patients in the age group of our study (Breton M *et al.*, 2016).

Prescribing Indices

Average drugs/patient in the prescriptions was found to be 2.38. Out of 150 prescriptions 16% had only 1 asthma drugs and 84 % prescriptions had 2 or more asthma drugs. A study conducted at Dehradun, India, reported that 84% asthmatic patients were on multiple drug therapy and only 16% patients were on single drug therapy which matches precisely with our study. The result of this study demonstrates similar prescribing pattern in comparison with the present study. Among those patients treated with multiple drug therapy, three drug combinations were more widely prescribed (41%) than two drugs (35%) or four drug (12 %) combination but in our study (two drugs 39%) is more commonly prescribed (Corbridge S and Corbridge TC, 2010).

Drugs used in asthma

The overall utilization of asthma drugs was found to be Beta Agonists (Salbutamol+Ipratropium bromide) (31.15%), inhaled corticosteroids (Budesonide) (24.51%), Xanthine Derivatives (Theophylline) (21.16%), Leukotrine modifiers (Montelukast) (14.20%). These findings are in agreement with Study conducted by Kumar *et al*³. In other medication, ceftriaxone was the most prescribed antibiotic 13.80 % of the total antibiotics prescribed. Apart from antibiotics pantoprazole was the most prescribed drugs 23.01 % of the total other than asthma medications.

All the asthma drugs in WHO essentials drug list were prescribed in all the 150 prescriptions having the

drugs Budesonide, Salbutamol, Ipratropium bromide, Beclomethasone except epinephrine which was not prescribed in any of the prescriptions of asthma.

Route of drugs

In the study it is found that for asthma 60.16% prescriptions had inhaled dosage form prescribed and 39.84% had oral dosage form prescribed. Inhalational route of administration gives instant action and efficacy due to which inhalational dosage form of the drugs were prescribed as causes a high local concentration in the lungs with allow systemic delivery, significantly improves the therapeutic effectiveness and minimizes systemic side effects. A study conducted by Shimpi *et al.*, found that 54%, 34% and 12% of anti- asthmatic drugs were

prescribed orally, via inhalation and by injection respectively but in our study inhalational dosage is prescribed more than oral dosage form (Garje Y *et al.*, 2016).

As recommended by GINA Guidelines, Formeterol along acting beta agonists was not prescribed as Monotherapy and it was given in combination with ICS. Prescription pattern studies can play a key role in helping the healthcare system to understand, interpret and improve the use of medications. Information generated through such surveys may assist healthcare systems and hospitals to design educational programs that may improve prescribing, drug use, cost of therapy and educate patients (Expert Panel Report, 2007).

Table 1. Age wise distribution of patients

Age (in years)	No. of Patients	Percent(%)
1 – 20	5	3.33
21– 40	67	44.64
41 – 60	41	27.33
61- 80	37	24.70
Total	150	100

Table 2. List of drugs in WHO EDL and Drugs prescribed in TOMCHRC

S. No	Drug list in WHO EDL	Drugs Prescribed in TOMCHRC
1.	Beclomethasone	Budesonide
2.	Budesonide	Salbutamol + Ipratropium Bromide
3.	Ipratropium bromide	Theophylline
4.	Salbutamol	Montelukast
5.	Epinephrine	Beclomethasone

Table 3. Descriptive Statics for total number of drugs per prescription

Static	Measure (Only Asthma drugs)
No. Of Prescriptions	150
Min. Drugs	1
Max. Drugs	5
Average	2.38
Std. Deviation	1.58

Table 4. Total Number of Drugs Prescribed

Parameters	Details
Total No. Of Prescriptions	150
Total No. of Drugs Prescribed	359
Average drugs per prescription	2.39
No. Of Drugs Prescribed (Only Asthma Drugs), Monotherapy	16%
Drug combinations	86%
No. Of drugs (2 or more)	2 drugs -39%
	3 drugs- 34%
	4 drugs – 9 %
	5 drugs – 0.03 %

Table 5. Distribution According to Drugs Prescribed (Antiasthmatic Medication)

Drugs Prescribed	Total number of drugs (Asthma)	Percent (%)
Budesonide	88	24.51
Theophylline	76	21.16
Montelukast	51	14.20
Salbutamol+Ipratropium Bromide	112	31.15
Beclomethasone+Levosalbutamol	10	2.70
Budesonide+Formeterol	06	1.59
Prednisolone	10	2.70
Salbutamol	07	1.91
Total	359	100

Table 6. Drugs prescribed in combinations

S. No	Drug combinations	No. Of prescriptions	Percent(%)
1.	Salbutamol+Ipratropium bromide	112	87.5
2.	Beclomethasone+Levosalbutamol	10	7.8
3.	Budesonide+Formeterol	06	4.7
	Total	128	100

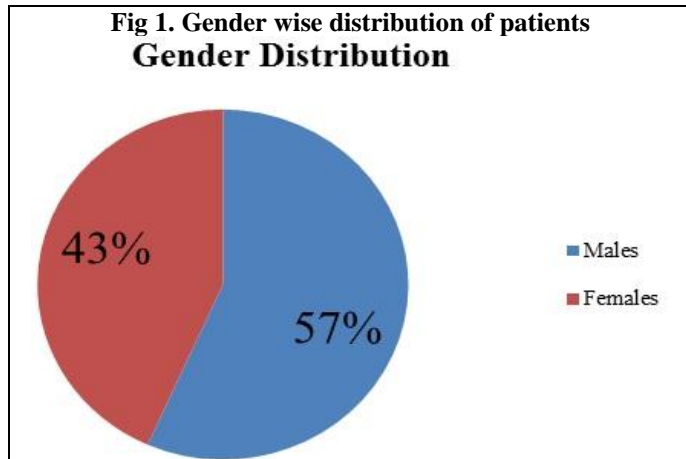
Table 7. Distribution of Drugs (Other Medications)

Drugs Prescribed	Total Number of Drugs (Other Medications)	Percent (%)
Ceftriaxone	33	13.80
Albendazole	15	6.30
Levofloxacin	20	8.40
Pantoprazole	55	23.01
Acetaminophen	31	12.97
Ranitidine	10	4.18
Dextromethorphan Hydrobromide+Phenylephrine	36	15.06
Lorazepam	5	2.09
Tramadol	3	1.25
Aluminium Hydroxide	12	5.02
Telmisartan	5	2.09
Amlodipine	17	7.11
Total	239	100

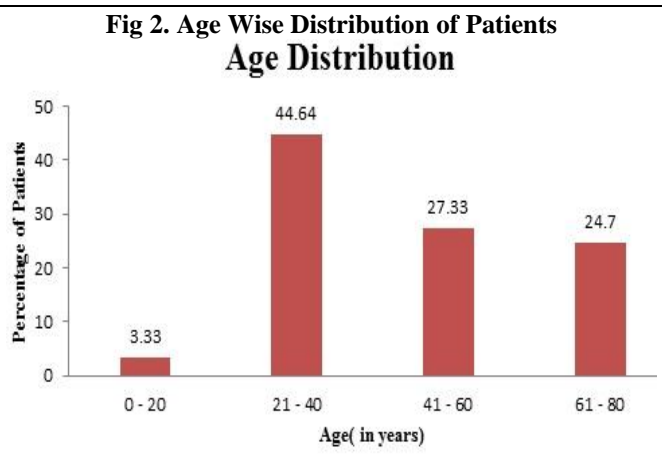
Table 8. Routes of Drugs Prescribed (Asthma Medications)

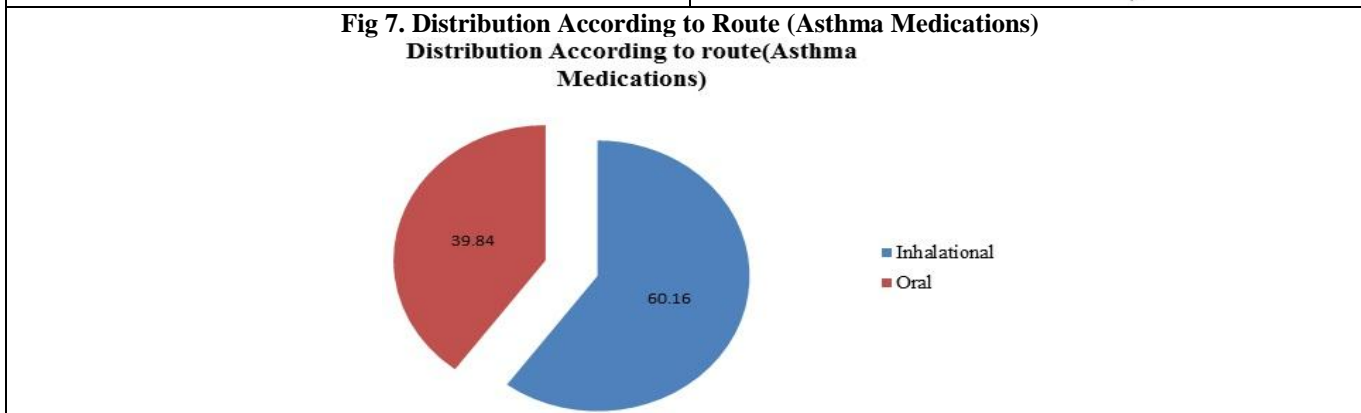
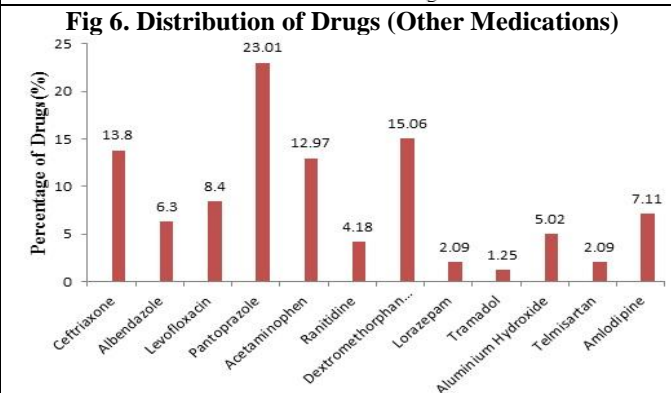
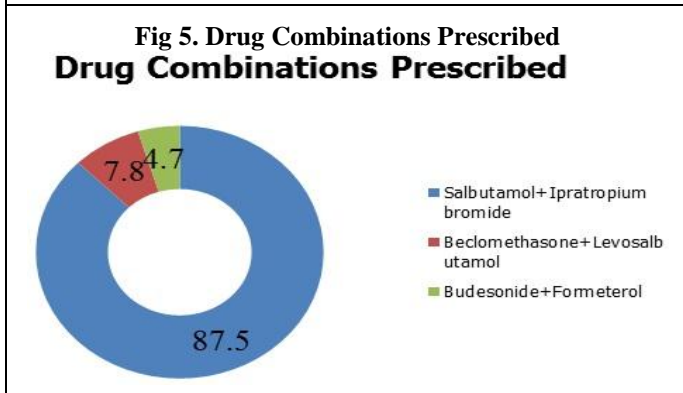
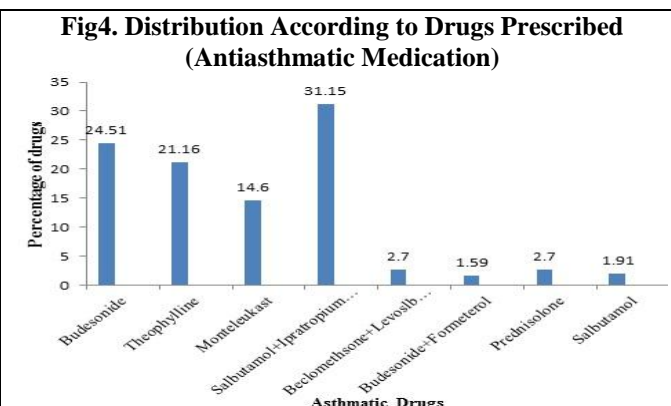
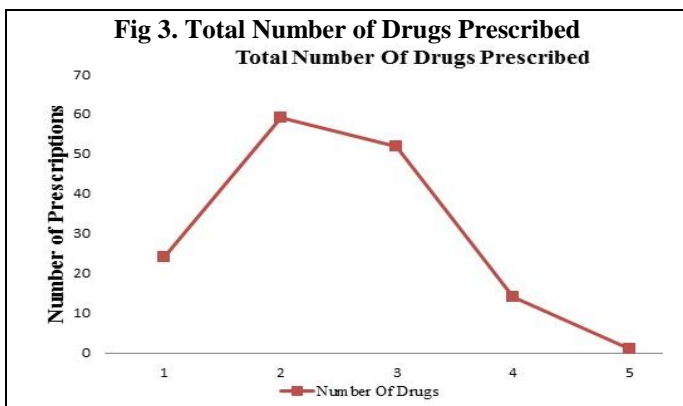
Route	Frequency	Percent (%)
Inhalational	216	60.16
Oral	143	39.84
Total	359	100

**Fig 1. Gender wise distribution of patients
Gender Distribution**



**Fig 2. Age Wise Distribution of Patients
Age Distribution**





CONCLUSION

The prescription pattern study showed high usage of Beta agonists in combination (Salbutamol+Ipratropium bromide) followed by inhaled corticosteroids. Average 2.38 asthma drugs were prescribed for every prescription. The practice of prescribing drugs with high efficacy and optimum cost needs to be followed in order to reduce medical and financial burden of the patient resulting in improvement of health. Prescription pattern studies can play a key role in helping the healthcare system to understand, interpret and improve the use of medications.

Information generated through such surveys may assist healthcare systems and hospitals to design educational programs that may improve prescribing, drug use, cost of therapy and educate patients.

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